

# Made in ITALY

An Italian enthusiast has achieved the unthinkable, recreating an extraordinary aeroplane from his nation's distant past. **Paolo Zerlotto** outlines the return to flight of a Caproni Ca.3







n Latin, the expression 'nulla via invia' can be translated as 'no road is impassible'.

This quote is written on both sides of the fuselage of Caproni Ca.3R reproduction I-ZANA and there are surely no better words to describe the incredible challenge of building this aeroplane, one successfully undertaken by Giancarlo Zanardo and his team.

Giancarlo organised a wonderful event in October 2023 at the Francesco Baracca airfield in Nervesa della Battaglia, near Treviso, Italy, to celebrate this achievement – the construction and flights of his magnificent World War One-era recreation. Throughout his life, Giancarlo has followed his great passion by building and flying a fleet of extraordinary aircraft, including the Blériot XI in which he crossed the Channel from Calais to Rochester

in 1989. In 2011, these aircraft were given to the Jonathan Collection Foundation so they could continue to be flown – and also seen, an important aspect for Giancarlo.

### Building the Caproni

Giancarlo said he got the idea for recreating the big Caproni during a conference near Florence. At the end of the event, Col Paciaroni, president of the Associazione Arma Aeronautica – an association for former Italian Air Force aviators – asked him if he knew that Maurizio Pagliano and Luigi Gori's aeroplane had crashed near Nervesa della Battaglia.

Back then, Giancarlo was not familiar with the story of Pagliano and Gori's Ca.3, but Col Paciaroni showed him a letter from the Carabinieri (Italian military police) dated 1919, in which they requested to search the area where the aircraft had crashed to confirm the location and catalogue any remains. The letter contained some precise references to the crash site, about two miles from the airfield. Fascinated by this story,

Giancarlo consulted some cartographers, overflew the area many times, and after a while managed to find the few remains left. Among these were cases of F 14 bullets that had not been shot but likely exploded when the aircraft caught fire. It was these findings that sparked an idea in Giancarlo – to build a flying replica of the big Ca.3.

He initially contacted Countess Maria Fede Caproni, daughter of Italian aviation pioneer Gianni Caproni, to illustrate the idea to her, and thereby obtained the original drawings used to build the bomber. He also managed to obtain two original wings. Construction of the Ca.3 began in 2008. Giancarlo worked alongside some trusted collaborators and companies with specialised machinery, including laser-cutters. Having two original wings at their disposal was crucial because it allowed them to understand the manufacturing techniques of the time.

The companies were recruited for their expertise in use of wood in aeronautical constructions. The spars are made of ash, a very strong wood, while the fuselage comprises both birch and mahogany plywood. Wing attachments were laser-cut and later welded by Giancarlo's team.

The fabric covering of the wings is stronger ➡

**Below**  
Building the Caproni has been a labour of love for its creator Giancarlo Zanardo and the many who worked on it. All Paolo Zerlotto unless noted





than the original and not subject to mould. Through a friend, Giancarlo sourced some historical turnbuckles for the wing bracing – and he had fun building the control wheels himself.

The wheels were provided by Mario Marangoni – an Italian tyre factory – and then adapted by adding the spokes, as was done originally. The wheel hubs had to be modified to use bush bearings. The original Ca.3 did not lean on its nose gear, but on a tail skid. However, since it would have been nearly impossible to control the aircraft on asphalt taxiways, the team had to modify this set-up and have it lean on its nose gear. Fixed in place on the original aircraft, this was made steerable in the replica.

A fair amount of innovation was needed to create the flight controls. Instead of having a single steel wire running along the whole aeroplane, they used a series of toothed pulleys and chains to make controls more precise. Giancarlo personally conceived and designed the universal joints used to control the ailerons. He initially created a model, and then had the Da Pos machine shop – specialised in such high precision works – build them. The seats were also handcrafted. Giancarlo's brother,

Paolo, helped build the rudders, working at home in his garage.

The elevator was redesigned to be neutral (allowing more pitch stability), and they also added a trim to make the aeroplane less heavy to pilot. The fuel tanks were originally placed behind the two crew, but they decided to reposition them behind each engine, to avoid decanting gasoline and to make refuelling simpler and safer. They also installed two 60-litre tanks in the upper half-wings, which work as fuel reserves (the five tanks can contain a total of 700 litres of fuel).

They then installed a trio of 180hp Ford 300 engines, derived from automotive technology to reduce costs. Many parts of the project were built in Giancarlo's factory in Conegliano, which has an area specifically equipped to build aircraft. Final assembly took place in the Gianni Caproni hangar at the Nervesa della Battaglia airfield. Due to its 72ft wingspan, the aeroplane could only be positioned sideways – special tugs were needed to move it in and out of the hangar.

It took almost five years to build the Caproni Ca.3

reproduction, concluding in 2015 and involving some 15,000 hours of work. To date, it is the largest amateur construction ever built in Italy and one of the largest in the world. The aircraft represents Ca.3 2378 *Asso di Picche* (Ace of Spades) piloted by Lts Pagliano and Gori on numerous missions against Austro-Hungarian targets during World War One.

### First flight

All flight tests were performed by Giancarlo and Cdr Carlo Zorzoli, who also took care of obtaining the authorisations needed. Being an instructor, Carlo would then qualify Giancarlo to fly the Ca.3. As with any flight test, they began with some slow taxiing, then faster taxiing, followed by some 'jumps' to check if the aircraft was controllable as planned. With such a large aeroplane and a runway of only 3,300ft (1,000m), even small, so-called 'flea jumps' are difficult due to the amount of space needed to safely stop. The duo had to use the rudder pedal a lot to maintain direction.

After numerous tests, on March 3, 2015, they successfully

#### Below

(Clockwise, from top right)

The legend 'nulla via invia' translates as 'no road is impassible'

A view inside the characterful machine's open cockpit

The wheels were provided by Italian tyre company Mario Marangoni and then adapted with added spokes

The aircraft's extraordinary 'triple tail' is resplendent in Italian colours







took off and performed the first actual flight test. The debut was shorter than planned, the aircraft returning to base after several minutes due to a failure of the left engine. They made it back to base without major difficulty on just two functioning engines. They had only been able to make one circuit of the airfield, but this first flight had revealed two things – the Ford 300 engines did not guarantee the reliability sought, and the power of the three engines together was unsatisfactory.

At the beginning of 2020, and in view of its forthcoming centenary in 2023, the Italian Air Force asked Giancarlo to enable the Ca.3R to fly again. A project to return the Caproni to the skies began in January 2022. The aim was to bring it to a celebratory airshow at Pratica di Mare, Rome, in June 2023. To meet the huge expense, the Italian Air Force procured major sponsorship for the Jonathan Foundation from MBDA, an aviation missile and defence specialist. The team now had to find and install three new engines on the Ca.3. The help of technical expert Daniele Beltrame proved crucial to this work – but

which engines to buy and from whom? They initially hoped to purchase some used powerplants from Luciano Sorlini S.p.a., one of Italy's biggest engine overhaul companies, but after the pandemic, delivery times had tripled and could not even be guaranteed due to the scarcity of parts.

Giancarlo and Daniele soon thought of an alternative solution. They would buy a twin-engine aircraft that could still fly, several hours before its engines required overhaul. A pilot from the Jonathan Collection team, Fabio Iannaccone, told them that an English friend of his was selling a twin-engine Cessna 310. Giancarlo promptly purchased it. Once it was at Nervesa della Battaglia it proved possible not just to extract the Cessna's engines, but also its instruments, cables and other systems that could be adapted and installed on the Caproni.

As Daniele was relatively inexperienced with 264hp Continental engines, he wrote to Cessna in the US explaining the team's unusual predicament, enclosing a picture of the Ca.3. Four days later, Cessna replied sending him detailed diagrams of the systems, adding: "Keep us updated because you are crazy!"

The duo immediately began redesigning the systems, keeping in mind that the third and central engine would be a Lycoming with 180hp and a 12-volt circuit, while the two Continentals and their respective instruments were powered by 24 volts. Due to the very tight schedule, they had to work non-stop for months, without any time off, but they achieved their goal, overcoming all technical problems one by one. The work was completed in May 2023.

### Return to the sky

The next challenge was to find the right pilot, as Giancarlo's licence had expired since the Caproni was last flown. Friends in the Italian Air Force indicated that Fabio Consoli was the right person for the job. A hugely experienced military pilot, he had stints on the F-104 Starfighter and Fiat G.222 among others, later flying airliners with Alitalia. Although he was initially unfamiliar with the whole Ca.3 story, he enthusiastically accepted the challenge.

As before, they began testing via some fast taxiing followed by small 'flea jumps'. They did not expect anything different from what they had experienced in 2015 – but this was Fabio's first stint in the cockpit. During the ➤

**Above**  
Caproni Ca.3R  
I-ZANA is a  
remarkable,  
full-size flying  
recreation of an  
aeroplane that first  
flew in 1916  
Luigino Caliaro





early tests, Consoli was assisted by a somewhat nervous Daniele Beltrame, who tried to explain with his hands, pointing at the instruments, what Consoli could not understand verbally (Fabio Consoli is Sicilian). As the aeroplane was extremely noisy, it was difficult for them to speak and hear each other, even though they were wearing helmets and headsets. The issue would present itself again in the future when it came to communicating with one another or Air Traffic Control (ATC). Indeed, to communicate with the latter they often had to reduce engine speed.

The aircraft tended to drift considerably and was always characterised by poor directional stability. As there are no reports on how the original machine flew, it's impossible to know if they were always like this. As they continued with the various hops, Fabio and Daniele gained a greater understanding of how to control their unorthodox charge. Fabio, sitting on the left, operated the control wheel, while Daniele took care of the engines. With time, they managed to improve the take-off and landing technique, learning that the aircraft could

keep its nose gear off the ground up to 31mph, while it takes off at 50-56mph.

The first full flight took place on June 8, 2023 – the aircraft duly confirmed its tendency to drift left and right constantly. Thankfully, the new engines worked perfectly and were powerful, offering a total of 700hp compared with the 540 of the previous set. Fabio later said that after around 15 minutes of flying he was keen to come back down as it was hard to control yaw. However, he soon learned that if he left the rudder pedal alone, the aeroplane would sway left and right, but was more or

less controllable.

Fabio had hoped to undertake a 20-mission 'test plan'. Unfortunately, there was not enough time to complete it but they did manage to perform six flights in two days, the minimum required to obtain the certificate needed from the ENAC (Italian civil aviation authority) to take the aeroplane to Pratica di Mare. In basic terms, they had to prove the aircraft could take off, was controllable in flight, had the declared flight range (about 3.5 hours for 186 miles), could reach a given flight altitude (6,000ft to pass the Apennines, which it reached in 35 minutes), and finally that it landed safely. Due to the loudness and vibrations of the aircraft, Fabio and Daniele were forced to use masks and helmets, which earned them some criticism, as they were considered anachronistic by some. The helmets also provided a measure of protection from bird strikes in the open cockpit aircraft.

### Beating the weather

Giancarlo asked the Jonathan Collection's Fabio Iannaccone to accompany the Caproni to

#### Above

The aircraft is powered by a centrally mounted Lycoming engine and two forward-facing Continentals, the latter derived from a Cessna 310  
Luigino Caliaro

#### Below

Left to right: Spad pilot Fabio Iannaccone, Ca.3 pilot Fabio Consoli, project leader Giancarlo Zanardo and Ca.3 co-pilot Daniele Beltrame

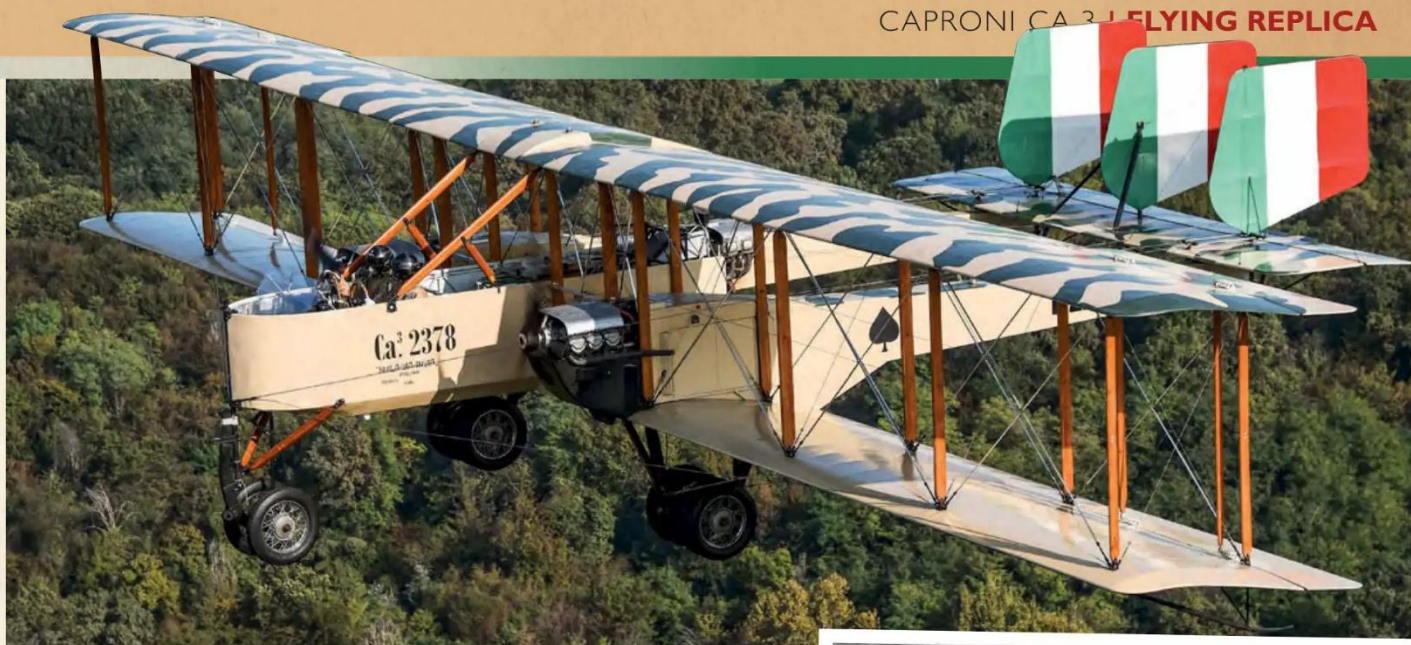


#### Left

The unmistakable machine is prepared for flight







Pratica di Mare in the group's Spad XIII. Iannaccone was also tasked with planning the transfer flight, which was due to arrive at its destination on June 15, 2023. The Spad is faster than the Ca.3, which flies at a cruising speed of just 75mph, but has a shorter range (124 miles compared with 186 miles for the Caproni). For this reason, they divided the transfer flight into three legs, with stops in Ravenna and Foligno. In addition to participating at the airshow, the Spad played a crucial role in the transfer flight. Iannaccone acted as scout, flying ahead of or behind the Caproni, checking the weather and helping with communications by acting as a bridge between ATC and the Ca.3.

The Permit to Fly arrived just a few days before the intended flight. A bigger problem was posed by the poor weather forecast for northern and central Italy, which forced them to postpone their departure by

a day. They flew the first leg without any problems but arrived in Ravenna at midday at the tail end of a thunderstorm. It was not possible to go any further, so they left the second leg for the following day, which was again blighted by poor visibility and low cloud. After waiting a few hours, Fabio Consoli decided to give it a try and had the Spad fly ahead as a weather scout.

It would be a difficult flight with continuous changes of course, passing the Apennines and emerging north of San Sepolcro, before finally arriving in Foligno. The forecast was again unfavourable, with storms due over Terni, Viterbo and Rome, which forced them to wait. Eventually, Consoli decided to take off, estimating that the storm would be over by the time they reached Rome. Having to make a detour in any case due to a violent thunderstorm north of Rome, they asked ATC for permission



to fly directly to Pratica di Mare, avoiding all mandatory waypoints. Permission was granted provided they performed a low pass at the airports of Roma Urbe and Ciampino! By then exhausted, Fabio, Daniele and the other Fabio landed at last in Pratica di Mare to the great excitement and relief of Giancarlo, who had driven ahead of them and was aware of the adverse weather conditions.

After a test flight with 20-25 knots of crosswind, the Ca.3 successfully flew in formation with the Spad XIII twice on both the Saturday and the Sunday of the event, in front of 300,000 people. Given the response, there's little doubt that it was a huge hit with the big crowd, the net result of some incredible teamwork and real passion for Italian aviation history.

Giancarlo has yet to reveal if he has any future creations or ventures in mind – but one thing's for sure, when it comes to this man and his team, 'nulla via invia'.

**Top**  
The remarkable sight of the Ca.3R recreation in flight  
Luigino Caliaro

**Above**  
Caproni pilot Fabio Consoli (left) with the Jonathan Collection's Fabio Iannaccone, who flew the Spad XIII



**Left**  
Historic pair – the Jonathan Collection's Spad XIII and the Caproni Ca.3R on the ground together